NOTES ON SPECIES OF *PTEROSTYLIS*.

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(*Communicated by E. Cheel.*)

(Ten Text-figures.)

[Read 26th August, 1925.]

Including an undetermined Tasmanian form, and a doubtful New South Wales *P. striata*, my herbarium contains 32 species of these interesting terrestrial orchids. Dr. R. S. Rogers in his paper on the Distribution of Australian Orchids (*Trans. Roy. Soc. S.A.*, xlvii, 1923) gives 43 as the total number of determined Australian species. Maiden and Betche in their *Census of the Plants of N.S.W.* (1916) credit this State with 26, and, if specific rank be allowed to *P. squamata* R. Br. and *P. Mitchelli* Lindl., this number will be 28. I do not know whether other species have been added to New South Wales records since 1916, but of those in the *Census*, my collection lacks only Fitzgerald's *P. pedoglossa*, *P. clavigera*, *P. coccinea*, and *P. Woollsii*, and of these I am acquainted with the first- and last-named. Until very recently, I had no Queensland specimens, but through the kindness of Miss H. Geissmann, of Tambourine Mountain, this defect is being remedied. There are six species (plus the doubtful *P. striata*) from New South Wales localities only, two from Tasmania only, three from Western Australia only, and one, or possibly two (see note on *P. decurva*) from Victoria only. The remainder are from various localities in the above States and South Australia. For all my South Australian specimens I am indebted to Dr. R. S. Rogers, of Adelaide, and for Western Australian plants to Mrs. G. E. Perrin, of Launceston, and Dr. Rogers. In the locality records given below, the initials M.R. denote specimens collected by myself; in all other cases the collector's name is given. To Miss H. Geissman I am indebted for beautiful photographic studies of Tambourine Mountain plants which I regard as *P. curta* R. Br. (two forms), *P. Baptistii* Fitzg. (see note under this species and *P. acuminata*), *P. nutans* R. Br., *P. grandiflora* R. Br. (see note), *P. obtusa* R. Br., *P. decurva* Rogers (doubtful), *P. pedunculata*, R. Br., and *P. longifolia* R. Br.

1. P. ophioglossa R. Br.—This species shares with *P. concinna* the distinction of a "forked" labellum. In *P. concinna* the lobes or prongs are short and blunt, in *P. ophioglossa* they are long and fine-pointed, hence the name. I have recorded this species from Copmanhurst, N.S.W., and recently received a specimen from Mrs. G. Annand, of Lismore, Richmond River. The flower is usually much larger than that of *P. concinna*, which it resembles, but the fine points of the lower lip are more curved.

Herbarium localities: Near Smith's Lake, Bungwahl (Myall Lakes), July, 1924 (A. Rupp and M.R.), Paterson, June, 1925 (M.R.)—a form with beautiful crimson striae on a translucent-greyish flower.

Range of species: Eastern Victoria (?) through N.S.W. into Queensland, at least as far north as Port Curtis. Chiefly in the coastal areas.

2. P. CONCINNA R. Br.—The flowers are a duller green than those of *P. ophioglossa*, with darker striae. The long points of the lateral sepals are typically very straight.

Sandringham-Black Rock, Vic., Aug., 1897, and Sept., 1922 (M.R.), Cheltenham, Vic., June, 1915 (Dr. and Mrs. R. S. Rogers), Lane Cove, N.S.W., July, 1919 (M.R.), Lindisfarne, Tas., July, 1920 (M.R.), Bungwahl, N.S.W., June, 1924 (M.R.).

Range: All States of the Commonwealth, except Western Australia, chiefly coastal and often littoral.

3. P. CURTA R. Br.—Maiden and Betche record two forms, one as var. *grandiflora* (Bentham). I have collected what I take to be two distinct forms both in New South Wales and Tasmania, but have always regarded the larger and handsomer as the type, and the other—far less common—as a variety. Miss Geissmann has sent photographs, with the vernacular name "Swallow-tail", of flowers apparently identical with the small form. She states that it blooms much earlier than the other; in the Bulladelah district of New South Wales it is rather more than a month earlier. Miss Geissmann informs me that Dr. Rogers was of opinion that it was a hybrid *P. curta* × *P. pedunculata*. I have not observed any indications of the latter as a possible parent, and should have expected a darker flower, whereas it is always a lighter green than the typical *P. curta*, with which it seems to agree in essential characteristics. In Victoria I have only seen the larger form. In Bailey's *Queensland Flora* the author notes a doubtful var. *grandiflora* with flowers more than 2 inches long, the lobes of the lower lip ending in long points. I rather suspect that this is really *P. Baptistii* Fitzg. A true *P. curta*, however, should be distinguishable by the peculiar twist of the brown labellum in the mature flower, for observation of which fresh specimens are necessary. It is present in the small form above referred to.

Wannon River Falls, Vic., Aug., 1893 (M.R.), National Park, S.A., Aug., 1909 (Dr. and Mrs. R. S. Rogers), Bellerive, Tas., Sept., 1920 (M.R.), Low Head, Tas., Oct., 1921 (Mrs. G. E. Perrin and M.R.), Launceston, Tas., Oct., 1922 (M.R.), Bulladelah District, N.S.W., early July (small form) and Aug. (large form), 1923 (M.R.).

Range: All States except Western Australia, extending to the interior slopes of the Dividing Range in Victoria and New South Wales.

4. P. ACUMINATA R. Br.—Moore and Betche (*Handbook of the Flora of N.S.W.*) describe the dorsal sepal or galea as much incurved. I do not think this is a constant characteristic, as I have not infrequently found it comparatively straight from the main curve of the flower. Miss Geissmann sends photographs under this name from Tambourine Mountain, Queensland, but her plant appears to me beyond doubt identical with the much larger and handsomer *P. Baptistii* Fitzg. I sent Miss Geissmann dried specimens of the latter, and she concurs in the above opinion. Moreover, her description of the habitat of the Tambourine flower agrees with that usually characteristic of *P. Baptistii* rather than with that of *P. acuminata*, which in my experience (New South Wales and Victoria) occurs chiefly in sandy scrubs and heathland, not in rich mountain gullies or about sheltered forest creeks. In general appearance *P. acuminata* resembles *P. curta*, but is easily distinguished by the acuminate sepal-points and the green, non-twisted labellum.

Parramatta River, N.S.W., May, 1916 (M.R.), Lane Cove, N.S.W., April, 1918 (M.R.), Bungwahl, N.S.W., June, 1924 (M.R.), coastal moors, near south end of Moreton Bay, Q. (Miss H. Geissmann). (The Tambourine Mountain plant flowers in September.)

Range: Victoria, New South Wales, and Queensland. Bailey (*Queensland Flora*) says the lobes of the lower lips are produced into "long fine points". I have invariably observed them to be comparatively short, though acuminate.

5. P. BAPTISTII Fitzg.—Probably the largest of all species in this genus. I have measured flowers 3 inches from base to tip of galea. The plant may reach as much as 2 feet 6 inches in height, but is also frequently quite dwarf. Until I resided in the Bulladelah district, I had only seen this plant in the dried state in the National Herbarium at Sydney. I found in great abundance in that district in 1923 a very large *Pterostylis* which appeared to be identical with Fitzgerald's plant, except that only in rare cases were the stem-leaves strongly developed. The National Herbarium authorities, however, confirmed my determination, and Dr. R. S. Rogers expressed the opinion that the plant was undoubtedly *P. Baptistii.* The first appearance of this orchid above ground gives no hint of its subsequent development. The basal rosette is comparatively small, and in early stages the plant is not easily distinguished from *P. pedunculata*, the rosette-leaves of both being rather dark green, and much crisped along the margins. Yet one developes the largest, and the other one of the smallest, of the flowers in the genus. Herbarium specimens give no conception of the grace and beauty of the mature *P. Baptistii*, with its stately poise, and its harmonies of translucent-white, brown, and green. As mentioned above, Miss H. Geissmann has sent photographs of a Tambourine orchid which I have no hesitation in identifying with the plant so abundant at Bulladelah. Dr. H. L. Kesteven of the latter place found a specimen with two flowers perfectly developed, but rather under the average in size; it is now in my herbarium.

The Bulladelah-Myall Lakes district is my only herbarium locality at present, and numerous specimens were collected in Sept., 1923, and Sept., 1924.

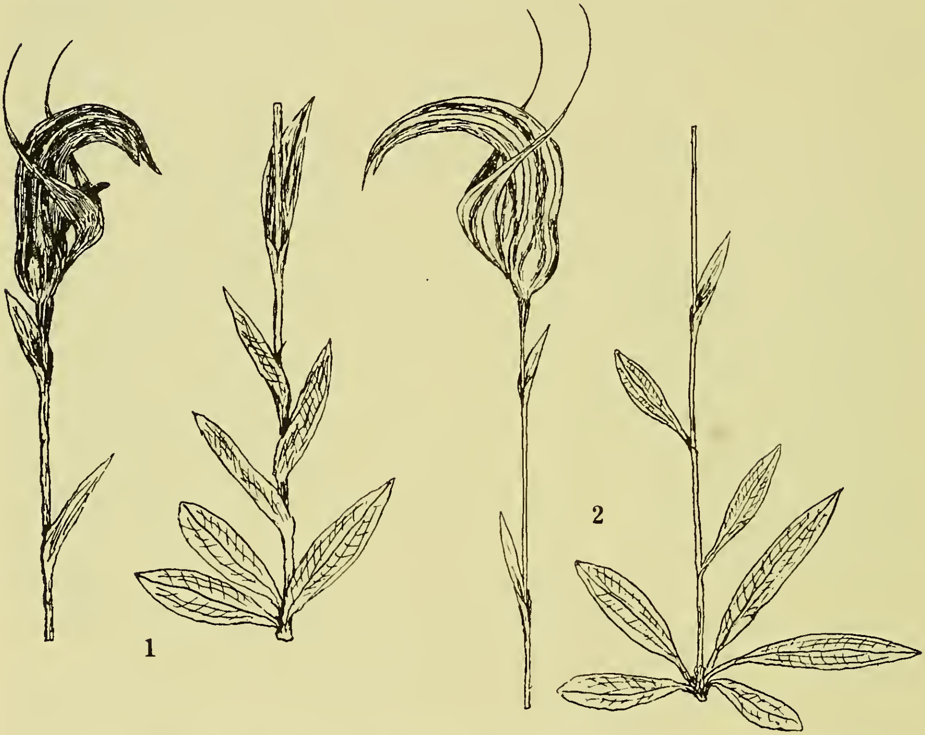
Range of species: Imperfectly known; probably from about the N.S.W. National Park, northward along the coastal forests well into Queensland.

6. P. FURCATA R. Br. (Text-fig. 1).—Many years ago I found a colony of Pterostyles with very large flowers, green with darker longitudinal bands, in a gully on the slopes of Mount Buninyong, Vic. At the time they appeared to me to agree fairly with the description of *P. cucullata* R. Br., and for years they were so labelled. Subsequently I was disposed to doubt this determination; and when I first saw dried specimens of *P. Baptistii*, I wondered whether I had not discovered a form of that species a very long way beyond its supposed limits. During a residence in Tasmania from 1920-1923, I found two Pterostyles which appeared to me obviously distinct species, but which both passed under the name *P. cucullata*; the larger of the two much resembled the Buninyong orchid, except that it was more slender and had narrower and more stalked leaves. Mr. J. H. Maiden agreed that they certainly seemed distinct species. The larger he suggested as *P. cucullata*, and he thought that the other might prove to be what Robert Brown had called *P. dubia*. But in 1923, I sent specimens of the two Tasmanian plants and the Buninyong plant to Dr. Rogers for examination. He replied that in his opinion the Buninyong orchid was a form of *P. furcata*, though not typical; the smaller Tasmanian was a typical *P. cucullata*, and the larger one, *P. falcata* Rogers. This was satisfactory save for one point. I had Tasmanian specimens which I had labelled *P. furcata*, but they were

clearly not identical with the Buninyong specimens. I sent one to Dr. Rogers, but he was unable to determine it. This latter is described below as an undetermined species.

Mount Buninyong, Vic., Nov., 1896 (M.R.).

Range: Victoria, Tasmania, and South Australia. I have a single flower, without leaves, etc., from Mt. Kosciusko, N.S.W., which resembles Dr. Rogers's figure of *P. furcata*.



1. *Pterostylis furcata* R. Br. Mt. Buninyong, Vic. × ½.
2. *Pterostylis falcata* Rogers. Mt. Barrow, Tas. × ½ approx.

7. P. FALCATA Rogers (Text-fig. 2).—See above, under *P. furcata*. Dr. Rogers has described and figured this species (*Proc. Roy. Soc. Vict.* xxviii (N.S.), Part I). It appears to be common in the colder parts of Tasmania. Mrs. G. E. Perrin collected numerous specimens in the western highlands (Mt. Pelion, Mt. Ossa, etc.), Jan., 1922. In bogs among the foothills of Mt. Barrow I found many with larger flowers than Dr. Rogers has shown. It is a very graceful and handsome species, but lacks the rich brown markings of *P. Baptistii*, which it approaches in size.

Mount Barrow, Tas., Jan., 1922 (M.R.).

Range: Tasmania, Victoria, and probably New South Wales. Mr. R. H. Dowe, of Tamworth, has described to me an orchid which he found on the higher slopes of the New England tableland, which I think is very likely this species.

8. P. SP. ? (Text-fig. 3).—This is the plant referred to under *P. furcata* as an undetermined Tasmanian species. Dr. Rogers suggested that it might be a hybrid. Its abundance and wide distribution seem to me against its being so

regarded. I found it in abundance in the gullies of Mount Nelson and Mount Wellington in the south, and at Cataract Gorge in the north; on Mount Barrow I found numerous plants in fruit which seemed identical. The only other Pterostyles associated with it were *P. nutans* and *P. obtusa* (or *decurva*, see below), and beyond the generic characters it has no resemblance to either. It seems to have affinities with *P. cucullata*, but lacks the robust leaf development of that species, and the point of the galea is not similar. Comparing it with Dr. Rogers's figure of *P. furcata*, it is typically taller (the Cataract Gorge plants were small, but were growing on an exposed ledge of rock under a she-oak), with a smaller flower, and a longer space between the latter and the first bract. The length of the lateral sepals is about the same as in *P. acuminata*. The flower is almost wholly green, but turns rather a dark-brown when dried.

Mount Nelson, Tas., Oct., 1920 (M.R.), Cascades, near Hobart, Oct., 1920 (M.R.), Cataract Gorge, Launceston, Oct., 1922 (M.R.).

Range: Tasmania.

9. P. CUCULLATA R. Br.—This species also is described and figured in Dr. Rogers's paper alluded to above. For many years I had specimens collected on the banks of Merri Merri Creek, near North Coburg, Vic., labelled *P. Mackibboni* F.v.M., but Dr. Rogers has shown that this is really a form of *P. cucullata*. The typical form I did not see until I found it in Tasmania. The species is an interesting one, owing to its variations. It may reach a foot in height, with a remarkable development of stem-leaves; on the other hand the leaves may be all basal, with the flower on a stalk not more than an inch long. The "hood" of the flower is most frequently greatly incurved like a parrot's beak, but the flower itself is upright and not bent over like *P. nutans*, the "Parrot's Beak" of popular designation. Rich dark-brown markings often make it a very attractive flower, but they are not a constant feature.

Merri Merri Creek, Vic., Sept., 1897 (M.R.), Cherry Gardens, S.A., Sept., 1915 (Dr. and Mrs. R. S. Rogers), Mount Wellington, Tas. (at about 3,500 feet), Nov., 1920 (M.R.).

Range: Recorded from all States except Queensland and Western Australia, but the confusion with *P. falcata*, mentioned above under *P. furcata*, should be remembered.

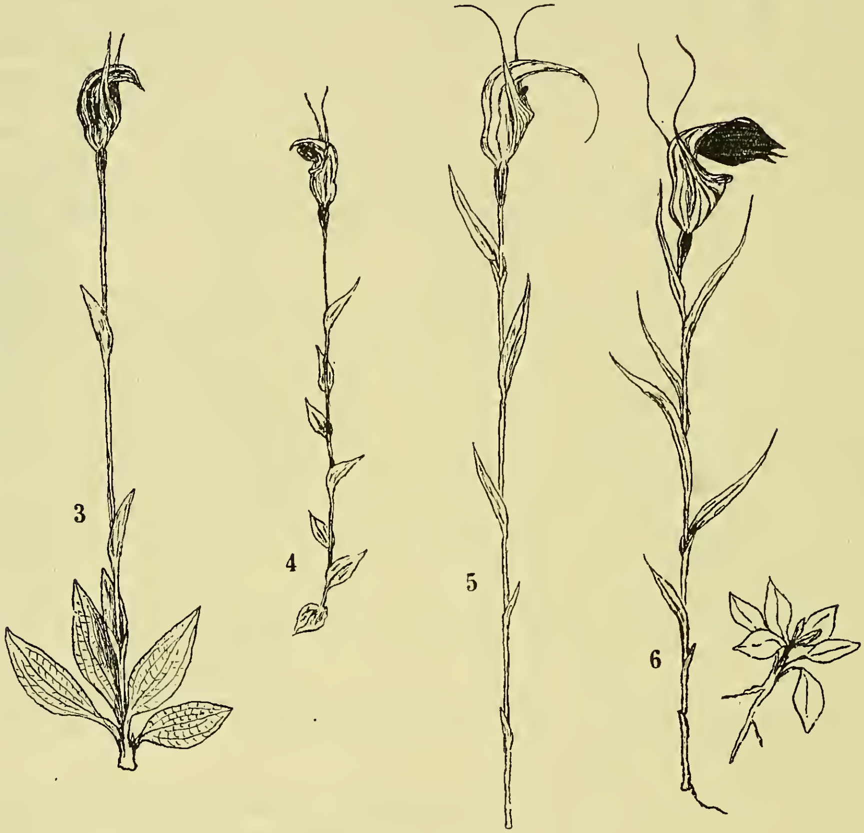
10. P. NUTANS R. Br.—Probably the commonest of all our Pterostyles, and widely familiar under the name of "Parrot's Beak." Near Launceston I found a colony of this species which in two successive years came into bloom a month after the general flowering time was over; but beyond unusual slenderness I could find no variation from the type. In the Bulladelah district a distinct variety occurs, flowering at least a month earlier than the type. It has a diminutive flower with a very short galea, and the labellum is more hispid than usual. It is probably the var. *hispidula*. Miss Geissmann reports what appears to be an identical form from Tambourine Mountain, Q. At Bulladelah I found a few weird teratological specimens which are now in the possession of Dr. R. S. Rogers.

Bream Creek, Geelong, Vic., Oct., 1891 (M.R.), Kuitpo Reserve, S.A., Oct., 1906 (Dr. and Mrs. R. S. Rogers), Ryde, N.S.W., July, 1916 (M.R.), Hobart, Tas., Aug., 1920 (M.R.), Bulladelah, N.S.W., May, 1924 (var. *hispidula*), and July, 1924 (M.R.). Also other localities.

Range: All States except Western Australia.

11. P. PEDUNCULATA R. Br.—The resemblance of the basal rosette to that of *P. Baptistii* in the young plants has been noted above. In the southern States, including Tasmania, there appears to be but one form of this species, with a

flower slightly bulging below, translucent-white marked with red-brown. In New South Wales this type occurs, but there is another, usually taller, with a very small narrow flower almost wholly red-brown. The two are very distinct when seen together; both grew in the Bulladelah district. Miss Geissmann's Queensland photograph looks like the smaller-flowered form. In one of the Mount Wellington gullies in Tasmania I obtained a specimen bearing two flowers.



3. *Pterostylis* sp. Mt. Nelson, Tas. × ½.
4. *Pterostylis pyramidalis* Lindl. Jarnadup, W.A. × ½.
5. *Pterostylis decurva* Rogers. Lower Fern Tree Gully, Vic. × ½ approx.
6. *Pterostylis grandiflora* R. Br. Bulladelah, N.S.W. × ½.

Sandringham, Vic., Oct., 1896 (M.R.), Balhannah, S.A., Sept., 1918 (Dr. and Mrs. R. S. Rogers), Mt. Wellington, Tas., Oct., 1920 (M.R.), Launceston, Tas., Oct., 1921 (M.R.), Bulladelah, N.S.W., Sept. and Oct., 1923 (M.R.), Paterson, N.S.W., Oct., 1924 (M.R.).

Range: All States except Western Australia.

12. P. NANA R. Br.—This dainty and diminutive species is sometimes found in colonies so dense that the plants might be plucked up by the handful. Chiefly littoral, but not exclusively so.

Sandringham, Vic., Oct., 1896 (M.R.), National Park, S.A., July, 1912 (Dr. and Mrs. R. S. Rogers), Westbury Road, Launceston, Tas., Sept., 1921 (M.R.), George Town, Tas., Oct., 1921 (Mrs. G. E. Perrin and M.R.).

Range: All States except Queensland.

13. P. PYRAMIDALIS Lindley (Text-fig. 4).—Flower resembling that of *P. nana*, but larger. It differs markedly from that species in its strongly developed, ovate-lanceolate stem leaves, and in the absence of a basal rosette.

Jarnadup, W.A., Sept., 1919 (Dr. and Mrs. R. S. Rogers), Margaret River, W.A., Sept., 1922 (Mrs. G. E. Perrin).

Range: Western Australia only.

14. P. ALATA Reichb. f. (= *P. praecox* Lindl.).—It might occasionally be mistaken for *P. obtusa*, but is quite distinct. The flower is greyish, with green or red-brown bands. Lower lip with a very broad sinus, the long, finely-pointed lobes either embracing the galea or sometimes extending out in front of it. Stem from 4 to 8 inches, the stem-leaves increasingly bract-like from above downwards.

Kangaroo Island, S.A., July, 1909 (Dr. and Mrs. R. S. Rogers), Bellerive, Tas., Sept., 1920 (M.R.), Launceston, Tas., Aug., 1922 (M.R.), Cape Barren I., Bass Straits, July, 1923 (Archdeacon Atkinson).

Range: All States except Queensland and Western Australia.

15. P. STRIATA Fitzg.—I have provisionally so labelled three specimens collected on the Nandewar Range, west of Barraba, N.S.W. They were growing in association with *P. reflexa* and *P. truncata*. They have a general resemblance to *P. obtusa*, but the labellum is narrow-linear and rather acute, and there is no projection at the sinus of the lower lip, which is a pronounced feature in *P. obtusa*. The galea is acuminate, the upper petals are rather blunt. Flower about 1 inch long, banded with red-brown and narrower green striae. Stem-leaves all approximately similar.

Nandewar Range west of Barraba, N.S.W., April, 1914 (M.R.).

Range: New South Wales.

16. P. OBTUSA R. Br. and 17. P. DECURVA Rogers (Text-fig. 5).—For the purpose of these notes these two species are dealt with together. For many years I had a specimen labelled *P. obtusa?* which I obtained near Lower Fern Tree Gully, Vic., in November, 1897. The doubt was due partly to the unusual elongation of the galea, and partly to the time of flowering. I collected numerous specimens of the Tasmanian *P. obtusa* which appeared to agree with the Victorian plant in both these points. In 1923, I found *P. obtusa* growing freely on the Alum Mountain, Bulladelah, flowering in the autumn. In every case the galea was merely acuminate, with no long decurved point. Dr. R. S. Rogers (*Trans. Roy. Soc. S. Aust.* xlvii, 1923) described a new species, *P. decurva*, from Lower Fern Tree Gully, Vic., and sent me a specimen collected by Mr. E. E. Pescott in that locality in November, 1923. Comparing my own plant from the same locality, collected twenty-six years before, there could be no doubt of their identity; and this raised the further question whether the Tasmanian plant supposed to be *P. obtusa* might not prove to be really *P. decurva*. Dr. Rogers sent me South Australian specimens of *P. obtusa* which were autumn-flowering, and agreed precisely with the Bulladelah plants. More recently Miss Geissmann has sent Queensland specimens, collected in May, 1925, which are identical with the Bulladelah and South Australian plants, except that the flowers are larger and the stem-leaves are more strongly developed. But with them Miss Geissmann sent two smaller specimens which she regards as distinct, and which (except that here also the stem-leaves are very prominent) appear identical with the Victorian

P. decurva and the Tasmanian supposed *P. obtusa.* Dr. Rogers writes to say that he is disposed to agree that the Tasmanian plant is really *P. decurva*, not *P. obtusa*; but further investigation is desirable. And if Miss Geissmann's smaller Queensland plants are *P. decurva*, we have the two forms flowering simultaneously on Tambourine Mountain in the autumn. It might be suggested that *P. decurva* is a variation from *P. obtusa* originating in the north, gradually altering its flowering-time as it spread southward, until in Tasmania it has become distinctly a summer flower (Nov.-Jan.). I do not know whether the typical *P. obtusa*, with a short galea, occurs in Tasmania at all. My numerous specimens were collected on Mounts Nelson and Wellington in the south, and Mount Barrow in the north, and in every instance they have a long decurved galea. In this form the fine points of the lower sepals are curved outwards after embracing the galea (Miss Geissmann calls attention to this in the Tambourine plants); in the typical *P. obtusa* they are usually approximately straight. Until fuller investigation has settled the distinction between these forms all my specimens are included with the long decurved galea under *P. decurva*, confining the name *P. obtusa* to those with a merely acuminate galea. Dr. Rogers does not think that Miss Geissmann's smaller plant is identical with *P. decurva*, but here also further investigation is required.

Localities.—*P. obtusa*: Hindmarsh Valley, S.A., April, 1912 (Dr. and Mrs. R. S. Rogers), Bulladelah, N.S.W., May, 1923 (M.R.), Tambourine Mt., Q., May, 1925 (Miss H. Geissmann). *P. decurva*: Lower Fern Tree Gully, Vic., Nov., 1897 (M.R.), and Nov., 1923 (E. E. Pescott, per Dr. R. S. Rogers), Mt. Nelson, Tas., Nov., 1920 (M.R.), Mt. Wellington, Tas., Dec., 1920 (M.R.), Mt. Barrow, Tas., Jan., 1922 (M.R.), Tambourine Mt., Q., May, 1925 (Miss H. Geissmann).

Range: *P. obtusa*, all States except Western Australia (Tasmania doubtful); *P. decurva*, all States except Western Australia (?).

18. P. RECURVA Benth.—A most remarkable looking flower, almost having the appearance of being "turned inside out." According to Dr. Rogers, the plant may attain a height of 20 inches. Stem-leaves numerous; lying rather close to the stem but not appressed. Flower about an inch long, banded longitudinally "dark greenish-grey" (Rogers). Lower lip with an acute sinus, the lobes not touching the galea, but recurved right away from it. Galea considerably shorter than lower lip, abruptly recurved, the petals very distinct from it, short, their points just meeting round the galea.

Woogenellup, Stirling Ranges, W.A., Sept., 1919 (Dr. and Mrs. R. S. Rogers), Mount Barker, W.A., Sept., 1922 (Mrs. G. E. Perrin).

Range: Western Australia only.

19. P. REFLEXA R. Br.—Somewhat similar in habit to *P. obtusa*, but the flower usually considerably larger. In New South Wales the highland forms seem to have consistently larger flowers than those on the coast. There appears to be a good deal of difference between forms included under this name. In some, the lower portion of the flower is extremely broad in proportion, and the points of the sepals, though fine, are comparatively short. In others, the flower is slender and the sepal-points are very long.

Nandewar Range, N.S.W., April, 1914 (M.R.), National Park, S.A., May, 1918 (Dr. and Mrs. R. S. Rogers), Warrabah, near Barraba, N.S.W., May, 1924 (R. H. Dowe), Bungwahl, N.S.W., June, 1924 (M.R.).

Range: Dr. Rogers reports it from all States. It is not in the *Flora of Tasamnia*, but of course may have been found there subsequently.

20. P. TRUNCATA Fitzg.—I found this in association with *P. reflexa* and the doubtful *P. striata* at about 3,000 feet on the Nandewar Range, N.S.W. It was at first determined for me as *P. praecox*, but subsequent familiarity with that species (= *P. alata*) showed it to be a very different plant. The Nandewar orchid seemed to me to agree with descriptions of Fitzgerald's *P. truncata*, and as Dr. Rogers concurred in this opinion I have retained it. The flower is almost twice as large as that of *P. alata*, on a very short stem of 1 to 2½ inches. Stem-leaves several, expanded or almost appressed. Flower banded with dark-green or reddish-brown striae; galea acuminate, upper petals bluntly truncate. Points of the lateral sepals extending far above the galea, hooked at the tips in all my specimens.

Nandewar Range, N.S.W., April, 1914 (M.R.).

Range: New South Wales and Victoria.

21. P. GRANDIFLORA R. Br. (Text-fig. 6).—The graceful lines of the flower crowning the prominent stem-leaves are very attractive, and the upper petals and galea are broadly expanded to form a rich red-brown hood, the rest of the flower being banded with the same colour against translucent-white. The basal rosette is usually withered before flowering time. The stem-leaves are developed with the longest one about the middle. Miss H. Geissmann sends a photograph of *P. grandiflora* from Tambourine Mountain, Q.

Lane Cove, N.S.W., June, 1917 (M.R.), Bulladelah, N.S.W., May and July, 1924 (M.R.).

Range: New South Wales and Southern Queensland.

22. P. PARVIFLORA R. Br.—In contrast with the last, this is probably the least attractive of all the Pterostyles (*P. aphylla* Lindl. included). The basal rosette may sometimes be present during flowering, but is not attached to the flowering stem. (This is true of some other species also—*P. grandiflora*, *P. obtusa*, *P. longifolia*—but in these cases it is unusual for the rosette to be present at flowering time. This seems to be the only real distinction between the typical *P. parviflora* and the form *aphylla*; the rosette of the latter disappears before flowering.)

Buninyong, Vic., May, 1896 (M.R.), Mt. Compass, S.A., April, 1915 (Dr. and Mrs. R. S. Rogers), Capertee, N.S.W., April, 1917 (M.R.), Lane Cove, N.S.W., June, 1917 (M.R.).

Range: All States except Western Australia.

23. P. BARBATA Lindl.—A peculiar and striking flower; from a few inches in height, and slender, to a robust plant of nearly 18 inches. Leaves crowded at the base but not rosulate, extending up the stem gradually as appressed bracts. Flower very upright, pale green, except the labellum; upper petals and galea appearing as if one segment. Labellum much exserted, often curved down, apparently by the weight of the brown knob at the end; filiform with many bright yellow hairs. Lower lip sharply decurved away from the upper; points of its lobes hardly acute.

Ringwood, Vic., Oct., 1896 (M.R.), The Hermitage, S.A., Sept., 1913 (Dr. and Mrs. R. S. Rogers), Kangaroo Valley, Hobart, Oct., 1920 (M.R.), Launceston and Low Head, Tas., Oct., 1921 (Mrs. G. E. Perrin and M.R.), Grampians, Vic., Oct., 1922 (Mrs. G. E. Perrin).

Range: All States except Queensland. I do not think it comes far north in New South Wales.

24. P. TURFOSA Lindl.—Obviously very closely allied to *P. barbata*, but more slender, less leafy, and the galea and lobes of the lower lip are produced into very long fine points—the latter not decurved sharply as in *P. barbata*. Labellum similar.

Upper King River, W.A., Sept., 1919 (Dr. and Mrs. R. S. Rogers), Albany, W.A., Sept., 1922 (Mrs. G. E. Perrin).

Range: Western Australia only.

25. P. CYCNOCEPHALA Fitzg.—A small plant, probably often confused with *P. mutica*, from which it may be distinguished by a more robust habit, by the flowers being massed together, and by the "swan-headed" labellum-appendage from which its name is derived. The labellum is irritable, springing back towards the column when shaken or touched. I have observed this characteristic in all the remaining species included below except *P. Daintreyana*.

Merri Merri Creek, Vic., Sept., 1897 (M.R.), Monarto South, S.A., Sept., 1906 (Dr. and Mrs. R. S. Rogers), Bellerive, Tas., Oct., 1920 (M.R.), Bulladelah, N.S.W., July, 1924 (A. Rupp).

Range: New South Wales, Victoria, South Australia and Tasmania, on grassland.

26. P. MUTICA R. Br.—Similar to *P. cycnocephala* and of similar habit, but more slender, reaching, I think, a greater height, and flowers fewer. Whole plant, as in *P. cycnocephala*, pale green.

Warialda, N.S.W., Sept., 1905 (M.R.), Monarto South, S.A., Sept., 1913 (Dr. and Mrs. R. S. Rogers).

Range: All States except Western Australia.

27. P. SQUAMATA R. Br. (Text-fig. 7).—Maiden and Betche (*Census*) include *P. squamata* and *P. Mitchelli* as varieties of *P. rufa* R. Br. Dr. Rogers (*South Australian Orchids*) restores them to specific rank, and I prefer to follow him, because, though *P. rufa* seems to be a very variable species and to approach both these forms, the latter typically show scarcely any variation over a very wide range of habitat. I have *P. squamata* from Launceston, Tas., and from Bulladelah, N.S.W.—900 miles distant—and they are alike in all respects. So also I have *P. Mitchelli* from Grangeville, S.A., and from Warialda, in the extreme north of New South Wales, and if the specimens got mixed I could not distinguish them. I think that any confusion between *P. squamata*, *P. rufa*, and *P. Mitchelli* is due to the variability of *P. rufa*. *P. squamata* is named from the unusual number of appressed stem-bracts. Flowers several, small, sepal-points acuminate, galea prominently down-curved and then suddenly straightening at the tip. Flowers rather prominently marked with red. Basal rosette withered at flowering time.

Westbury Road, Launceston, Nov., 1921 (M.R.), Markwell, near Bulladelah, N.S.W., Sept., 1924 (Dr. H. L. Kesteven). I had found a budding plant at Bulladelah early in Sept., 1924, which I considered to be either *P. rufa* or *P. squamata*. Dr. Kesteven sent me the specimens now in my herbarium.

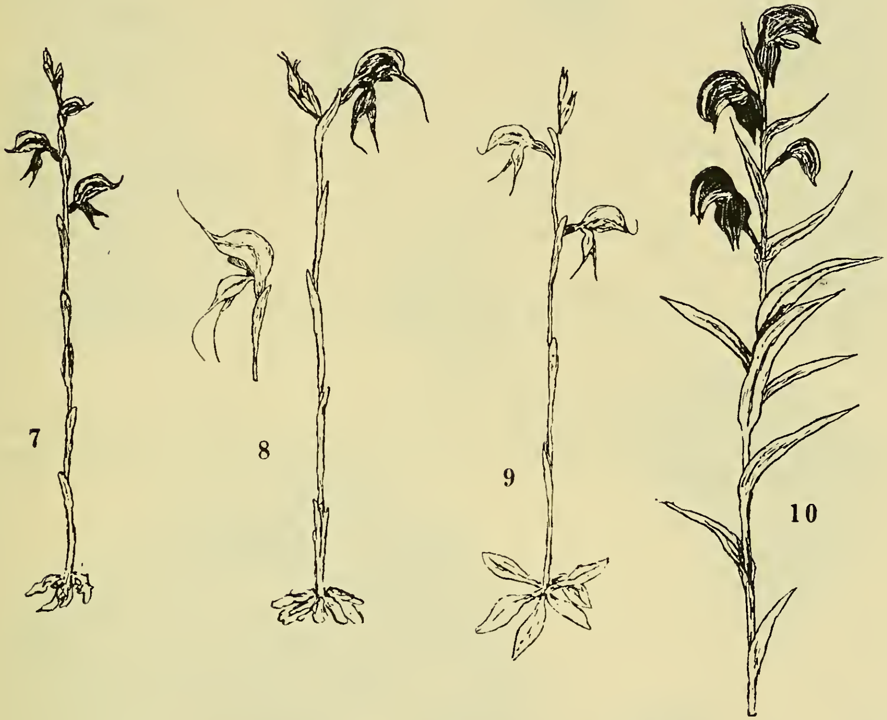
Range: New South Wales, South Australia, and Tasmania; probably Victoria also.

28. P. RUFA R. Br. (Text-fig. 8).—See remarks under *P. squamata*. Dr. Rogers has sent me two beautiful South Australian specimens which have no red about them at all. The only other specimen I have, and all specimens I have seen in New South Wales, are rather heavily marked with red like *P. squamata*, but the

flowers are twice the size of that species, and the sepals have long fine points. In Dr. Rogers's flowers they have still longer points. Basal rosette withered at flowering time.

Blackwood, S.A., Nov., 1906 (Dr. and Mrs. R. S. Rogers), Barraba, N.S.W., Sept., 1913 (M.R.).

Range: All States.



7. *Pterostylis squamata* R. Br. Launceston, Tas. × ½.
8. *Pterostylis rufa* R. Br. Barraba, N.S.W. (complete specimen), Blackwood, S.A. (flower). × ½.
9. *Pterostylis Mitchelli* Lindl. Warialda, N.S.W. × ½.
10. *Pterostylis vittata* Lindl. National Park, S.A. × ½.

29. P. Mitchelli Lindl. (Text-fig. 9).—Basal rosette not withered at flowering time. Otherwise considerably resembling Nos. 27 and 28, but always with green flowers. Dr. Rogers very carefully describes these three closely-allied species (*South Australian Orchids*, p. 42).

Grangeville, S.A., Aug., 1907 (Dr. and Mrs. R. S. Rogers), Gunyerwarildi, Warialda District, N.S.W., Sept., 1916 (M.R.).

Range: All States except Western Australia, according to Dr. Rogers. I should be surprised to find such a characteristically "interior" species in Tasmania.

30. P. daintreyana F. v. Muell.—An interesting little plant, apparently restricted to the Port Jackson district or not extending far from it. In mossy places on sandstone outcrops. Plant up to 1 foot high, very slender; basal rosette

present at flowering time. Stem-leaves bract-like below, expanding towards the very small green flowers, which have long points to the sepals.

Gordon, N.S.W., June, 1917 (M.R.).

31. P. VITTATA Lindl. (Text-fig. 10).—Chiefly in tea-tree scrub on the edge of sea beaches. Stem from a few inches to well over a foot. No basal rosette observed. Stem-leaves very strongly developed, lanceolate, the largest about the middle. Flowers several, ½ inch to about 1 inch long from the roof of the galea to the down-turned tips of the lateral sepals; sometimes greenish, but more usually heavily marked with reddish or purplish-brown. An attractive species.

Sandringham, Vic., July, 1892 (M.R.), National Park, S.A., May, 1909 (Dr. and Mrs. R. S. Rogers), Cannington, W.A., Sept., 1922 (Mrs. G. E. Perrin), Cape Barren I., Bass Straits, July, 1923 (Archdeacon Atkinson).

Range: All States except New South Wales and Queensland.

32. P. LONGIFOLIA R. Br.—Somewhat resembling No. 31, but more slender, leaves longer and narrower, and flowers always quite green. Basal rosette withering before flowering time, or, if present, on a separate stem. Plant occasionally very tall.

National Park and Kangaroo Island, S.A., July, 1909 (Dr. and Mrs. R. S. Rogers), Lane Cove, N.S.W., July, 1919 (M.R.), Hobart, Tas., Aug., 1920 (M.R.), Grampians, Vic., Oct., 1922 (Mrs. G. E. Perrin), Bulladelah, N.S.W., July, 1923 (M.R.).

Range: All States except Western Australia.

(The accompanying pen-and-ink sketches are all from herbarium specimens, though an effort has been made to avoid the straightening effect of pressing upon the curve of the galea.)